

SECTION 914 -- PIPE UNDERDRAINS

914.01 -- Description

The Contractor shall furnish and install pipe underdrains, filter fabric, and underdrain headwalls as prescribed in the plans.

914.02 -- Material Requirements

1. All materials shall conform to the requirements in Table 914.01.

Table 914.01

Material Requirements	
Applicable Materials	Section
Corrugated Pipe Underdrains	1035
Plastic Pipe	1038

2. Gravel aggregate placed in the trench shall conform to the gradations shown in Table 914.02. The material shall have a Los Angeles Abrasion loss percentage (AASHTO, T-96) of not more than 40. The material shall also have a soundness loss of not more than 12 percent by weight at the end of 5 cycles using sodium sulfate solution.

Table 914.02

Granular Backfill Material		
Percent Passing		
English Sieve Size (Metric)	Target Value	Tolerance
1 inch (25 mm)	100	0
1/2 inch (12 mm)	94	±4
No. 4 (4.75 mm)	65	±25
No. 10 (2.00 mm)	20	±20
No. 50 (300 µm)	5	±5
No. 200 (75 µm)	3	±3

3. Granular backfill material shall be compacted to 100 percent of maximum density as determined by NDR T 99.
4. The trench should be lined with an approved filter fabric before filling with aggregate. The filter fabric shall be installed according to the plan details.
5. Filter fabric shall be on the NDR Approved Products List.
6. The filter fabric material will be chosen to accommodate the type of in-situ soils and within the manufacturer's requirements and limits.

914.03 -- Construction Methods

1. a. The trench for laying pipe underdrains shall be excavated beginning at the outlet end and proceeding toward the upper end, true to the required line and grade.

b. Trenches shall be of sufficient width to provide working space on each side of the pipe and in no case shall the width of the trench be less than 12 inches (300 mm).

c. Any material excavated below the proper grade shall be restored in kind to proper bearing capacity.

2. The perforated pipe shall be laid directly upon the floor of the trench. All loose material laying on the floor of the trench shall be removed prior to the placing of the perforated pipe. Grade and alignment shall not vary from the prescribed grade by more than 0.03 foot (9 mm) at any point. the joints between sections of pipe shall be connected in a fashion acceptable to the Engineer.

3. Dead ends of pipe shall be tightly closed with satisfactory plugs. Discharge ends shall be protected with a suitable rodent screen.

4. If unsuitable foundation soils are present, other suitable material shall be placed under the pipe to prevent displacement.

5. a. Once the pipe is in place, it shall be covered immediately with granular material as specified in these Specifications.

b. The granular material shall be of uniform depth on either side of the pipe.

6. Special inlets and special devices at the outlet end of the pipe shall be constructed as shown in the plans.

7. a. The underdrain headwalls shall be constructed as shown on the plans.

b. The concrete for the headwalls shall be Class 47B-SG-3000 (47B-SG-20 MPa).

8. The Contractor shall place filter fabric as shown on the plans.

914.04 -- Method of Measurement

1. Each size of pipe underdrains shall be measured in linear feet (meters) along the centerline of the pipe.

2. Headwalls will be measured by the each.

914.05 -- Basis of Payment

- | 1. Pay Item | Pay Unit |
|---|---------------------------------|
| _____ Perforated Pipe Underdrain | Linear Foot (LF)
[meter (m)] |
| _____ Perforated _____ Pipe Underdrain | Linear Foot (LF)
[meter (m)] |
| _____ Nonperforated Pipe Underdrain | Linear Foot (LF)
[meter (m)] |
| _____ Nonperforated _____ Pipe Underdrain | Linear Foot (LF)
[meter (m)] |
| Underdrain Headwall | Each (ea) |
2. Filter fabric is subsidiary to the appropriate underdrain pay item.
3. Granular backfill is subsidiary to the appropriate underdrain pipe pay item.
4. Payment is full compensation for all work prescribed in this Section.